

REMARKS

Claims 1-22 are pending in the present application. Claims 1-22 were objected to under 37 CFR 1.75(a) and (d)(1), and were rejected under 35 U.S.C. §103. Applicant has amended claims 1, 6, 12 and 17. No new matter has been introduced.

Claim Objections

Claims 1-22 were objected to for failing to particularly point out and distinctly claim the subject matter of the invention. Applicant has amended claims 1, 6, 12, and 17 as requested by the Examiner. Reconsideration and withdrawal of these objections are respectfully requested.

Section 103 Rejections

Claims 1-10 and 12-21 were rejected under 35 U.S.C. §103(a) as being obvious over U.S. Patent Application Publication No. 2003/0206652 (Nister) in view of Snow, *et al.*, "Exact Voxel Occupancy with Graph Cuts", IEEE 2000.

Claims 11 and 22 were rejected under 35 U.S.C. §102(e) as being obvious over Nister and Snow, and further in view of Goldberg, *et al.*, "A New Approach to the Maximum Flow Problem", Journal of the Association for Computing Machinery, 35(4):921-940 (Oct. 1988).

Applicant respectfully traverses these rejections.

Applicant urges that the Examiner has failed to make out a *prima facie* case of obviousness for these rejections. To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the combination of prior art references must teach or suggest all the claim limitations. The teaching or suggestion to make the

claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure.

Applicant's amended claims 1 and 12, are directed to "segmenting one or more objects from one or more backgrounds in an image", including, *inter alia*, "defining a plurality of image nodes, . . . defining a source node; defining a sink node; defining one or more object seeds, said object seeds corresponding to image nodes within said objects; defining one or more background seeds, said background seeds corresponding to image nodes within said backgrounds; connecting said source node with each said object seed . . . connecting said sink node with each said background seed. . .".

Nister is directed to creating an optimized depth map, which is a two-dimensional array of values that represents a surface in space. Nister discloses a set of pixels, each of which is connected with an edge to a source associated with one depth map, a sink associated with another depth map, and to at least one neighboring pixel. Each edge is assigned a weight, and a graph cut is sought so that each pixel is connected to either the source or the sink.

The Action stated that Nister defines one or more object seeds and one or more background seeds because after cutting, each of the pixels will correspond to either a depth map associated with the source, or a depth map associated with the sink. These depth maps were referred to in the Action as, respectively, an object or foreground map, and a periphery or background map. The Action then stated that, after cutting, each of the pixels is designated as an "object seed" or a "background seed".

Applicant respectfully disagrees. In Nister, every pixel in the graph is connected to the source and the sink. Applicant urges that there is no disclosure, teaching or suggestion in Nister of "defining one or more object seeds" or "defining one or more background seeds" and "connecting said source node with each said object seed" or "connecting said sink node with each said background seed", as claimed in Applicant's claims 1 and 12. The Examiner's interpretation of Nister, wherein pixels are designated

as object seeds or background seeds after cutting, benefits from improper hindsight provided by Applicant's disclosure.

The Action concedes that Nister does not disclose "object seeds corresponding to image nodes within said objects" or "background seeds corresponding to image nodes within said backgrounds", and then cites Snow as disclosing source and sink nodes corresponding to, respectively, the object and background of an image.

Applicant respectfully disagrees. Snow is directed to a binary labeling of a set of voxels. Snow discloses a weighted graph with two distinguished terminal vertices called a source and a sink. There are weighted links between each voxel in the graph and its neighbors, and between each voxel and the terminals. Thus, the graph disclosed in Snow is essentially identical to the graph disclosed in Nister. Every voxel in Snow is connected to both the source and sink. There is no teaching or suggestion in Snow of "one or more object seeds" or "one or more background seeds". Thus, Snow fails to correct the deficiencies of Nister as noted above. Further, since Snow does not teach or suggest "one or more object seeds" or "one or more background seeds", Snow does not teach or suggest "object seeds corresponding to image nodes within said objects" or "background seeds corresponding to image nodes within said backgrounds", as claimed in Applicant's claims 1 and 12. Once again, Applicant urges that the Examiner is benefiting from hindsight gained from Applicant's disclosure.

Thus, since the combination of Nister and Snow fails to teach or suggest "defining one or more object seeds", "defining one or more background seeds", "connecting said source node with each said object seed" or "connecting said sink node with each said background seed", Applicant urges that a *prima facie* case of obviousness of claims 1 and 12 cannot be maintained over the combination of Nister and Snow. Reconsideration and withdrawal of these section 103 rejections are respectfully requested.

Claims 2-10 and 13-21 depend from claims 1 and 12, respectively, and are thus patentable for at least the same reasons as claims 1 and 12. Reconsideration and withdrawal of these section 103 rejections are respectfully requested.

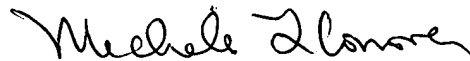
Claims 5 and 16 are unobvious over Nister for additional reasons. These claims recite “wherein said t-link cost between the source and the object seeds and between the sink and the background seeds is infinity”. In rejecting these claims, the Action stated that because Nister’s links between pixels and their respective node are fixed once the assignment is completed via the graph cut, the links are substantially infinite due to the fact that they are not to be broken. This statement once again benefits from an improper hindsight reading of Applicant’s disclosure. Nister explicitly discloses that the weights of edges connecting a pixel to the sink or source are based on the values of the respective depth maps. The depth map values represent the depth or distance reading to a surface, which a person skilled in the art would interpret to be finite, since the surface is not infinitely far away. There is thus no teaching or suggestion that these values are not finite, that is, are infinite. Applicant urges that a *prima facie* case of obviousness over claims 5 and 16 cannot be maintained. Reconsideration and withdrawal of these section 103 rejections are respectfully requested.

Regarding claims 11 and 22, which depend from claims 1 and 12, respectively, the Action cited Goldberg as disclosing the push-relabel method. However, as discussed above, Nister and Snow fail to teach or suggest “defining one or more object seeds, said object seeds corresponding to image nodes within said objects” and “defining one or more background seeds, said background seeds corresponding to image nodes within said background”, as recited in claims 1 and 12, and Goldberg does not correct these deficiencies. Applicant urges that a *prima facie* case of obviousness against claims 11 and 22 cannot be maintained based on the combination of Nister, Snow, and Goldberg. Reconsideration and withdrawal of these section 103 rejections are respectfully requested.

CONCLUSION

Applicant urges that claims 1-22 are in condition for allowance for at least the reasons stated. Early and favorable action on this case is respectfully requested.

Respectfully submitted,



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